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FIGURE 1A

1 CGGATGCTGC TGCTACTGTC ACTTCTGCCG CTGCCGCTGT TGTTACAGAT
51 TTTGCTTTTG CTCCTTCTAC CGCATGACAA TTGTTTTCTT CGCCTAAGCA
101 GATACCAGCC TCAGATGCTC AAGGTGAGAG TCTTGCCTTT CGCTCTGGGC
151 TATTGGTTCA CTTAATCCGG TCAATTTGTT CGCTGCTCGT GGTGTCTTT
201 CTCCCCGCCC TCCTTCCCCC TGTTTTGTTT TGTTTCGCTT GCTTTCGGGG
251 GGACGCTCCT TCCCTCAGTC AGAAGAGCTG GAATTGCTTG AGAGGCGTAT
301 AAGGAATTAT AAAAGTGGCC AGGAAACACG AGCGCAGTGA CTGCAGAGCT
351 GCCCTTGGCT TCGGCAAGGC AGCGTGAGCG GCAGAGGGCT CGGGCAGGGG
401 GCGGGGGGTC TCCTTTTTTCC CGTGCGTTCC TCTTCTCCCA GTTCGGATGA
451 TGTTGCTGTT TCGGACCTCT CGCTGACTCC TGCCCTGTGA TTTTGTCTGA
501 GCGCTGTGAC TGTTACTCCG TCTCTTCTG TCTGTGTTTC ACAGTAATGG
551 ACTGTGATAG AGTTAAGGCC TTTTGGAGGT GAGCTGTGTC ACAGCTGATG
601 CTTAAACATG TCTGAAGTAG GCACCGAGAC TTTCCCCAGC CCCTCGGCTC
651 AGCTGAGCCC TGATGCATCC CTTGGCGGGC TCCCGGCTGA GGAGAACATG
701 CCGGGGCCCC ACAGAGAGGA CAGCAGGGTC CCAGGTGTGG CAGGCCTGGC
751 CTCGACCTGC TCGGTGTGCC TGAAGCAGA GCGACTGAAG GGCTGCCTCA
801 ACTCTGAGAA GATCTGCATC GCCCCTATCC TGGCTTGCCT GCTCAGCCTC
851 TGCCTCTGCA TTGCTGGCCT CAAGTGGGTC TTTGTGGACA AGATTTTGA
901 GTATGACTCT CCTACACACC TTGACCCTGG GAGGATAGGA CAAGACCCAA
951 GGAGCACTGT GGATCCTACA GCTCTGTCTG CCTGGGTGCC TTCGGAGGTG
1001 TATGCCTCAC CCTTCCCCAT ACCTAGCCTT GAGAGCAAGG CTGAAGTGAC
1051 AGTGCAAACCT GACAGCTCGC TCGTGCCCTC CAGGCCCTTC CTTCAGCCTT
1101 CTCTCTACAA CCGCATCCTA GATGTCGGGT TGTGGTCCTC TGCCACACCG
1151 TCACTGTCAC CATCCTCCCT GGAGCCTACC ACGGCATCTC AGGCACAAGC
1201 AACAGAAACC AATCTCCAAA CTGCTCCAAA ACTTTCCACT TCTACATCTA
1251 CAACTGGGAC AAGTCATCTC ACAAATGTG ACATAAAGCA GAAAGCCTTC
1301 TGTGTAAATG GGGGAGAGTG CTACATGGTT AAAGACCTCC CAAACCCTCC

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FIGURE 1B

```
1351  ACGATACCTA  TGCAGGTGCC  CAAATGAATT  TACTGGTGAT  CGCTGCCAAA
1401  ACTACGTAAT  GGCCAGCTTC  TACAAGCATC  TTGGGATTGA  ATTTATGGAA
1451  GCTGAGGAAC  TGTACCAGAA  ACGGGTGCTG  ACCATAACTG  GCATTTGCAT
1501  TGCTCTTCTA  GTAGTTGGCA  TCATGTGTGT  GGTGGCCTAC  TGCAAAACCA
1551  AGAAGCAGAG  GAAAAAGTTG  CATGACCGCC  TTCGGCAGAG  CCTTCGCTCA
1601  GAGAGGAACA  ACGTTATGAA  CATGGCAAAT  GGGCCACACC  ACCCCAACCC
1651  ACCACCAGAC  AATGTCCAGC  TGGTGAATCA  GTACGTTTCA  AAAAACATAA
1701  TCTCCAGTGA  ACGTGTCGTT  GAGCGAGAAA  CCGAGACCTC  GTTTTCCACA
1751  AGCCACTACA  CCTCAACAAC  TCATCACTCC  ATGAÇAGTCA  CCCAGACGCC
1801  TAGCCACAGC  TGGAGTAATG  GCCATACCGA  AAGCATTCTC  TCCGAAAGCC
1851  ACTCCGTGCT  CGTCAGCTCC  TCAGTGGAGA  ATAGCAGGCA  CACCAGCCCA
1901  ACAGGGCCAC  GAGGCCGCCT  CAATGGCATT  GGTGGGCCAA  GGAAGGCCAA
1951  CAGCTTCCTC  CGGCATGCAA  GAGAGACCCC  TGA CTCCTAC  CGAGACTCTC
2001  CTCACAGTGA  AAGGTATGTC  TCAGCTATGA  CCACACCAGC  TCGCATGTCA
2051  CCCGTTGATT  TCCCACTCC  AACTTCTCCC  AAGTCCCCTC  CATCTGAAAT
2101  GTCACCACCA  GTTTCCAGCT  TGACCATCTC  CATCCCTTCG  GTGGCGGTGA
2151  GTCCCTTTAT  GGACGAGGAG  AGACCGCTGC  TGT TGGTGAC  CCCACCACGG
2201  CTGCGTGAGA  AGTACGACAA  CCACCTTCAG  CAATTCAACT  CCTTCCACAA
2251  CAATCCCACC  CATGAGAGCA  ACAGTCTGCC  ACCCAGTCCT  CTGAGGATAG
2301  TGGAGGATGA  AGAGTATGAG  ACCACGCAGG  AGTACGAACC  AGCACAGGAG
2351  CCTCAAAGA  AACTCACCAA  CAGCCGGAGG  GTGAAAAGAA  CAAAGCCCAA
2401  TGGCCATATT  TCCAGCAGGG  TAGAAGTGGA  CTCCGACACA  AGCTCTCAGA
2451  GCACTAGCTC  TGAGAGCGAA  ACAGAAGATG  AAAGAATAGG  TGAGGATACA
2501  CCATTTCTTA  GCATACAAAA  TCCCATGGCA  ACCAGTCTGG  AGCCAGCCGC
2551  TGCATATCGG  CTGGCTGAGA  ACAGGACTAA  CCCGGCAAAT  CGCTTCTCCA
2601  CACCAGAAGA  GTTGCAAGCA  AGGTTGTCCA  GTGTAATAGC  TAACCAAGAC
2651  CCTATTGCTG  TATAAGACAT  AAACAAAACA  CATAGATTCA  CATGTAAAC
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FIGURE 1C

```
2701 TTTATTTTAT ATAATGAAGT ATTCCACCTT TAAATTAAAC AATTTATTTT
2751 ATTTTAGCAA TTCCGCTGAT AGAAAACAAG AGTGGAAAAA GAAACTTTTA
2801 TAAATTAAGT ATACGTATGT ACAAATGTGT TATGTGCCAT ATGTAGCAAT
2851 TTTTACAGT ATTTCCAAAA TGGGGAAAGA TATCAATGGT GCCTTTATGT
2901 TATGTTATGT TGAGAGCAAG TTTTGTACAG CTACAATGAT TGCTGTCCCG
2951 TAGTATTTTG CAAAACCTTC TAGCCCTCAG TTGTTCTGGC TTTTTTGTGC
3001 ATTGCATTAT AATGACTGGA TGTATGATTT GCAAGAATTG CAGAAGTCCC
3051 CATTTGCTTG TTGTGGAATC CCCAGATCAA AAAGCCCTGT TATGGCACTC
3101 ACACCCTATC CACTTCACCA GGAAAAAAA AAAATCAAAA AAAAAAAAAA
3151 AAAAAAAGA AAAGAAAGAG AAAAAAGAAA AGAAAAAGAA AAAAAAGCT
3201 GAAAAAATAA AA
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FIGURE 2

1 GCCCYCHFCR CRCCYRFCFC SFYRMTIVFL A*ADTSLRCS R*ESCLSLWA
51 IGSLNPVNLF AARGCLSPRP PSPCFVLFRL LSGGRSFPQS EELELLERRI
101 RNYKSGQETR AQ*LQSCPWL RQGSVSGRGL GQGAGGLLFP VRSSSPSSDD
151 VAVSDLSTLP AL*FLLSAVT VTPSLSVCVS Q*WTVIELRP FGELCHS*C
201 LNMSEVGTET FPSPSAQLSP DASLGGLPAE ENMPGPHRED SRVPGVAGLA
251 STCCVCLEAE RLKGCLNSEK ICIAPILACL LSLCLCIAGL KWFVVDKIFE
301 YDSPTHLDPG RIGQDPRSTV DPTALSAWVP SEVYASPFPI PSLESKAEVT
351 VQTDSSLVPS RPFLQPSLYN RILDVGLWSS ATPSLSPSSL EPTTASQAQA
401 TETNLQTAPK LSTSTSTTGT SHLTCKDIKQ KAFCVNGGEC YMVKDLNPFP
451 RYLCRCPNEF TGDRCQNYVM ASFYKHLGIE FMEAEELYQK RVLTTITGICI
501 ALLVVGIMCV VAYCKTKKQR KKLHDLRLRQS LRSERNVMN MANGPHHPNP
551 PPDNVQLVNQ YVSKNIISSE RVVERETETS FSTSHYTSTT HHSMTVTQTP
601 SHSWSNGHTE SILSESHSVL VSSSVENSRH TSPTGPRGRL NGIGGPREGN
651 SFLRHARETP DSYRDSPHSE RYVSAMTTTPA RMSPVDFHTP TSPKSPPSEM
701 SPPVSSLTIS IPSVAVSPFM DEERPLLLVT PPRLREKYDN HLQQFNSFHN
751 NPTHESNSLP PSPLRIVEDE EYETTQEYEP AQEPPKKLTN SRRVKRTKPN
801 GHISSRVEVD SDTSSQSTSS ESETEDERIG EDTPFLSIQN PMATSLEPAA
851 AYRLAENRTN PANRFSTPEE LQARLSSVIA NQDPIAV*DI NKTHRFTCKT
901 LFYIMKYSTF KLNNLFYFSN SADRKQEWKK KLL*IKYTYV QMCYVPYVAI
951 FYSISKMGKD INGAFMLCYV ESKFCTATMI AVP*YFAKPS SPQLFWLFCA
1001 LHYNDWMYDL QELQKSPFAC CGIPRSKSPV MALTPYPLHQ EKKKIKKKKK
1051 KKRKEREKRK EKEKKS*KNK

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FIGURE 3

1 CGGCCTGTAA GATGCTGTAT CATTGTTG GGGGGCCTC TCGTGGTAA
51 TGGACCGTGA GAGCGGCCAG GCCTTCTTCT GGAGGTGAGC CGATGGAGAT
101 TTATTCCCCA GACATGTCTG AGGTCGCCGC CGAGAGGTCC TCCAGCCCCT
151 CCACTCAGCT GAGTGCAGAC CCATCTCTTG ATGGGCTTCC GGCAGCAGAA
201 GACATGCCAG AGCCCCAGAC TGAAGATGGG AGAACCCTG GACTCGTGGG
251 CCTGGCCGTG CCCTGCTGTG CGTGCCTAGA AGCTGAGCGC CTGAGAGGTT
301 GCCTCAACTC AGAGAAAATC TGCATTGTCC CCATCCTGGC TTGCCTGGTC
351 AGCCTCTGCC TCTGCATCGC CGGCCTCAAG TGGGTATTTG TGGACAAGAT
401 CTTTGAATAT GACTCTCCTA CTCACCTTGA CCCTGGGGGG TTAGGCCAGG
451 ACCCTATTAT TTCTCTGGAC GCAACTGCTG CCTCAGCTGT GTGGGTGTGC
501 TCTGAGGCAT ACACTTCACC TGTCTCTAGG GCTCAATCTG AAAGTGAGGT
551 TCAAGTTACA GTGCAAGGTG ACAAGGCTGT TGTCTCCTTT GAACCATCAG
601 CGGCACCGAC ACCGAAGAAT CGTATTTTTC CTTTTTCTTT CTTGCCGTCC
651 ACTGCGCCAT CCTTCCCTTC ACCCACCCGG AACCTGAGG TGAGAACGCC
701 CAAGTCAGCA ACTCAGCCAC AAACAACAGA AACTAATCTC CAACTGCTC
751 CTAAACTTTC TACATCTACA TCCACCACTG GGACAAGCCA TCTTGTA AAA
801 TGTGCGGAGA AGGAGAAAAC TTTCTGTGTG AATGGAGGGG AGTGCTTCAT
851 GGTGAAAGAC CTTTCAAACC CCTCGAGATA CTTGTGCAAA GCGGAGGAG
901 CTGTACCAGA AGAGAGTGCT GACCATAACC GGCATCTGCA TCGCCCTCCT
951 TGTGGTCGGC ATCATGTGTG TGGTGGCCTA CTGCAAAACC AAGAAACAGC
1001 GGAAAAAGCT GCATGACCGT CTTCGGCAGA GCCTTCGGTC TGAACGAAAC
1051 AATACGATGA ACATTGCCAA TGGGCCTCAC CATCCTAACC CACCCCCGA
1101 GAATGTCCAG CTGGTGAATC AATACGTATC TAAAAACGTC ATCTCCAGTG
1151 AGCATATTGT TGAGAGAGAA GCAGAGACAT CTTTTTCCAC CAGTCACTAT
1201 ACTTCCACAG CCCATCACTC CACTACTGTC ACCCAGACTC CTAGCCACAG
1251 CTGGAGCAAC GGACACACTG AAAGCATCCT TTCCGAAAGC CACTCTGTAA
1301 TCGTGATGTC ATCCGTAGAA AACAGTAGGC ACAGCAGCCC AACTGGGGCC
1351 G

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FIGURE 4

1 ACKMLYHLVG GASAW*WTVR AARPSSGGEP MEIYSPDMSE VAAERSSSPS
51 TQLSADPSLD GLPAAEDMPE PQTEDGRTPG LVGLAVPCCA CLEAERLRGC
101 LNSEKICIVP ILACLVSCLL CIAGLKWVFN DKIFEYDSPT HLDPGGLGQD
151 PIISLATAA SAVVVSSEAY TSPVSRAQSE SEVQVTVQGD KAVVSFEPSA
201 APTPKNRIFA FSFLPSTAPS FPSPTRNPEV RTPKSATQPQ TTETNLQTAP
251 KLSTSTSTTG TSHLVKCAEK EKTFCVNGGE CFMVKDLSNP SRYLCKGGGA
301 VPEESADHNR HLHRPPCGRH HVCGGLLQNG ETAEKAA*PS SAEPSV*TKQ
351 YDEHCQWASP S*PTPRECPA GESIRI*KRH LQ*AYC*ERS RDILFHQSLY
401 FHSPSLHYCH PDS*PQLEQR TH*KHPFRKP LCNRDVIRRK Q*AQQPNWG

FIGURE 5A

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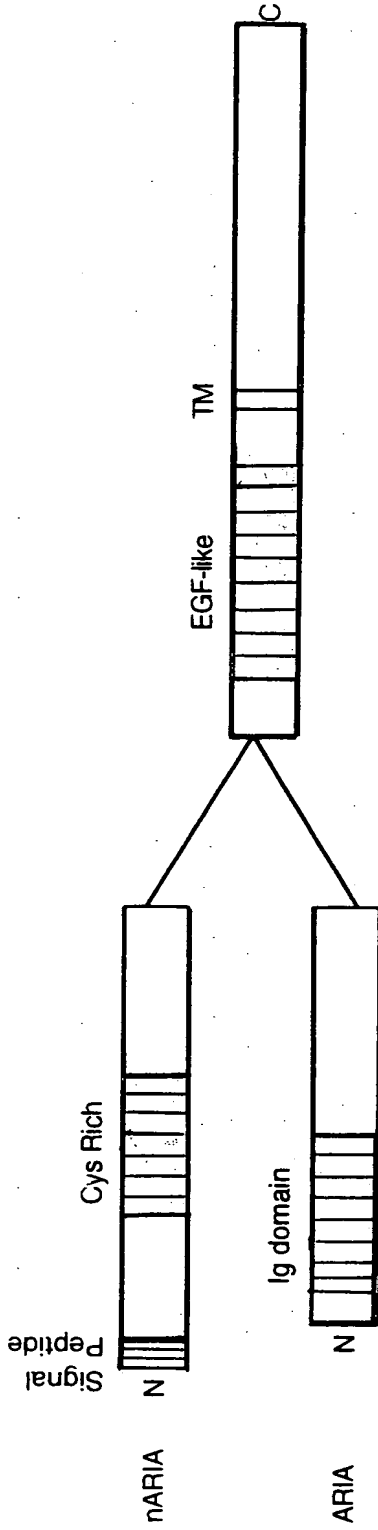


FIGURE 5B

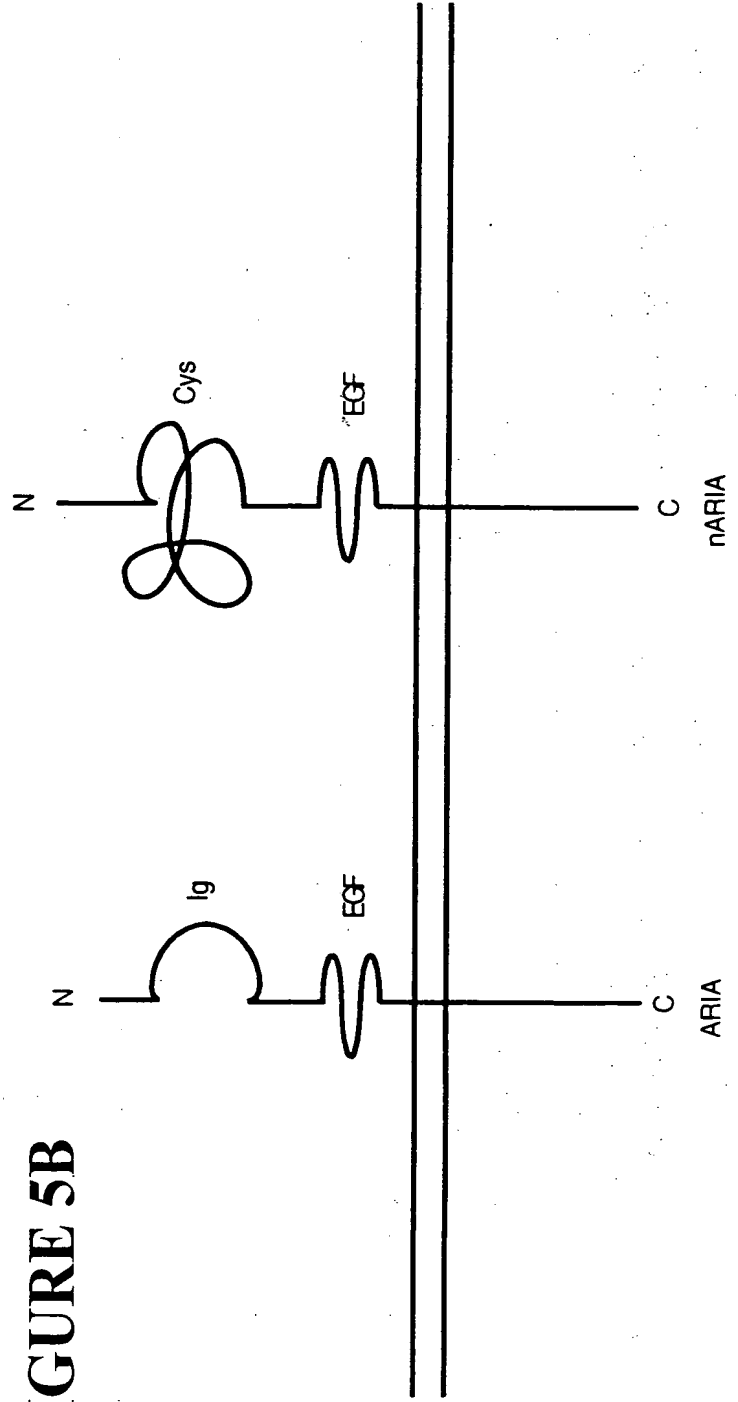
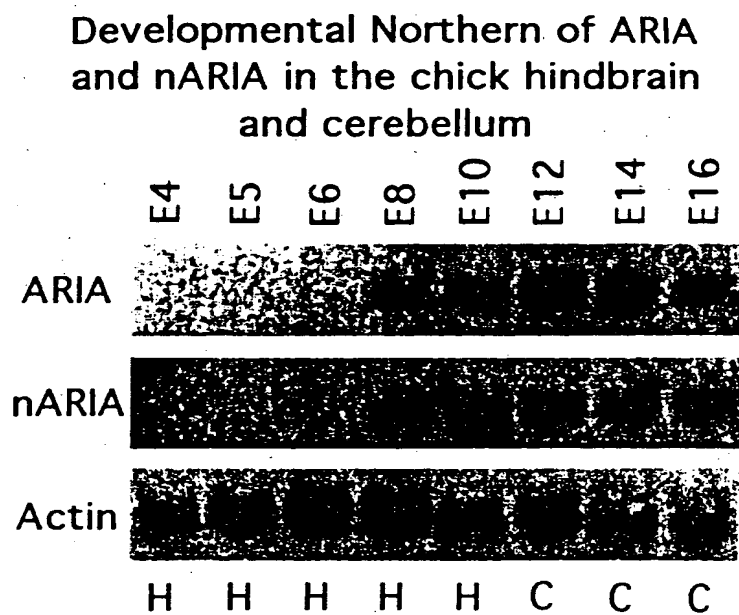


Figure 1: Northern blot analysis of ARIA expression. The blot shows three rows of bands: nARIA, ARIA, and Actin. The columns represent different tissues: Forebrain, Optic Tectum, Cerebellum, Spinal Cord, Muscle, Heart, Lung, Stomach, Liver, Adrenals, Kidney, and Spleen. nARIA bands are present in all tissues. ARIA bands are present in Forebrain, Optic Tectum, Cerebellum, Spinal Cord, Muscle, Heart, Lung, and Stomach, but absent in Liver, Adrenals, Kidney, and Spleen. Actin bands are present in all tissues as a loading control.

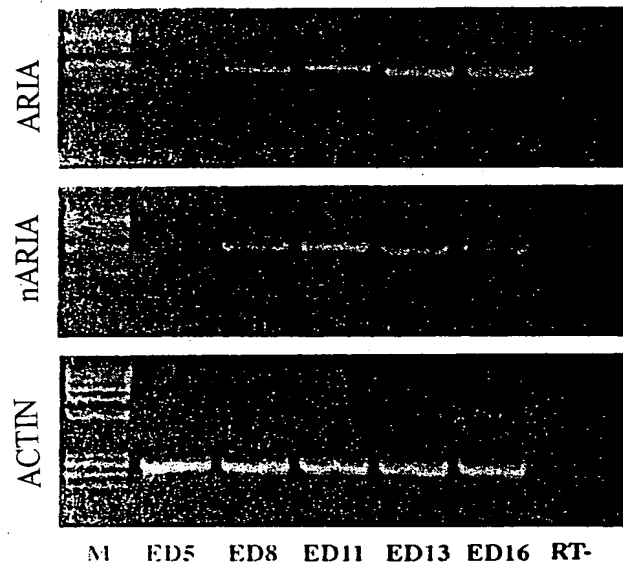
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FIGURE 7

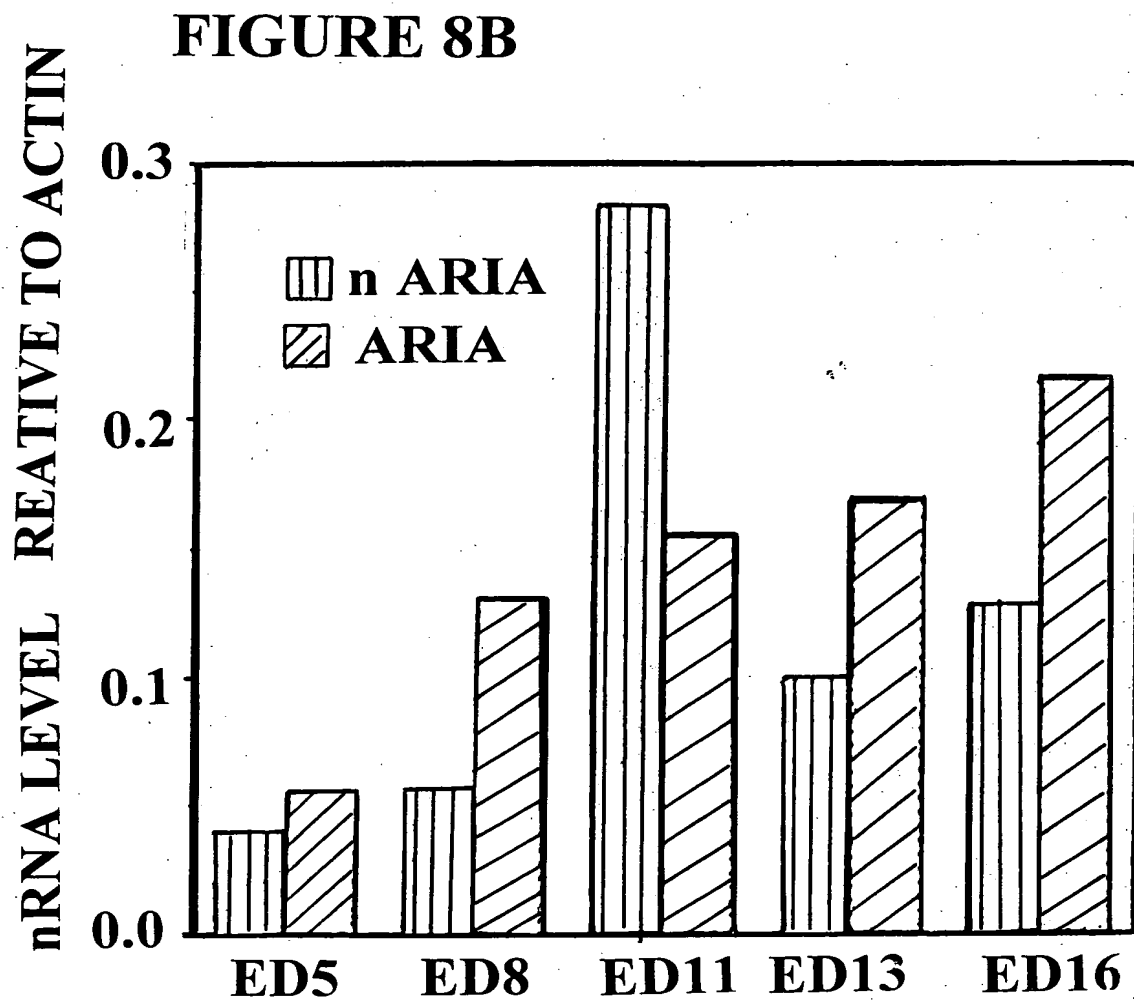


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FIGURE 8A



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FIGURE 9A

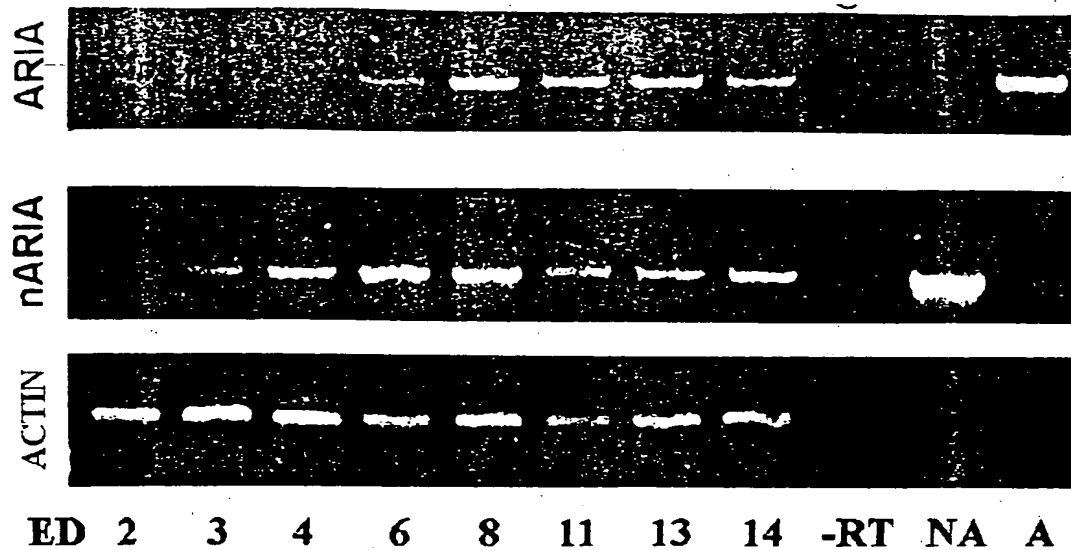
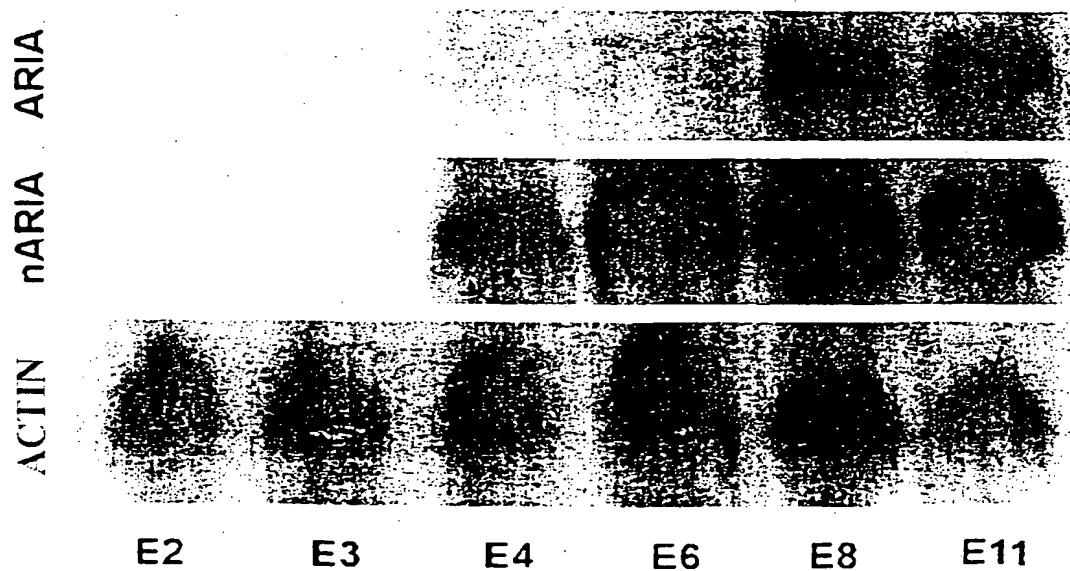
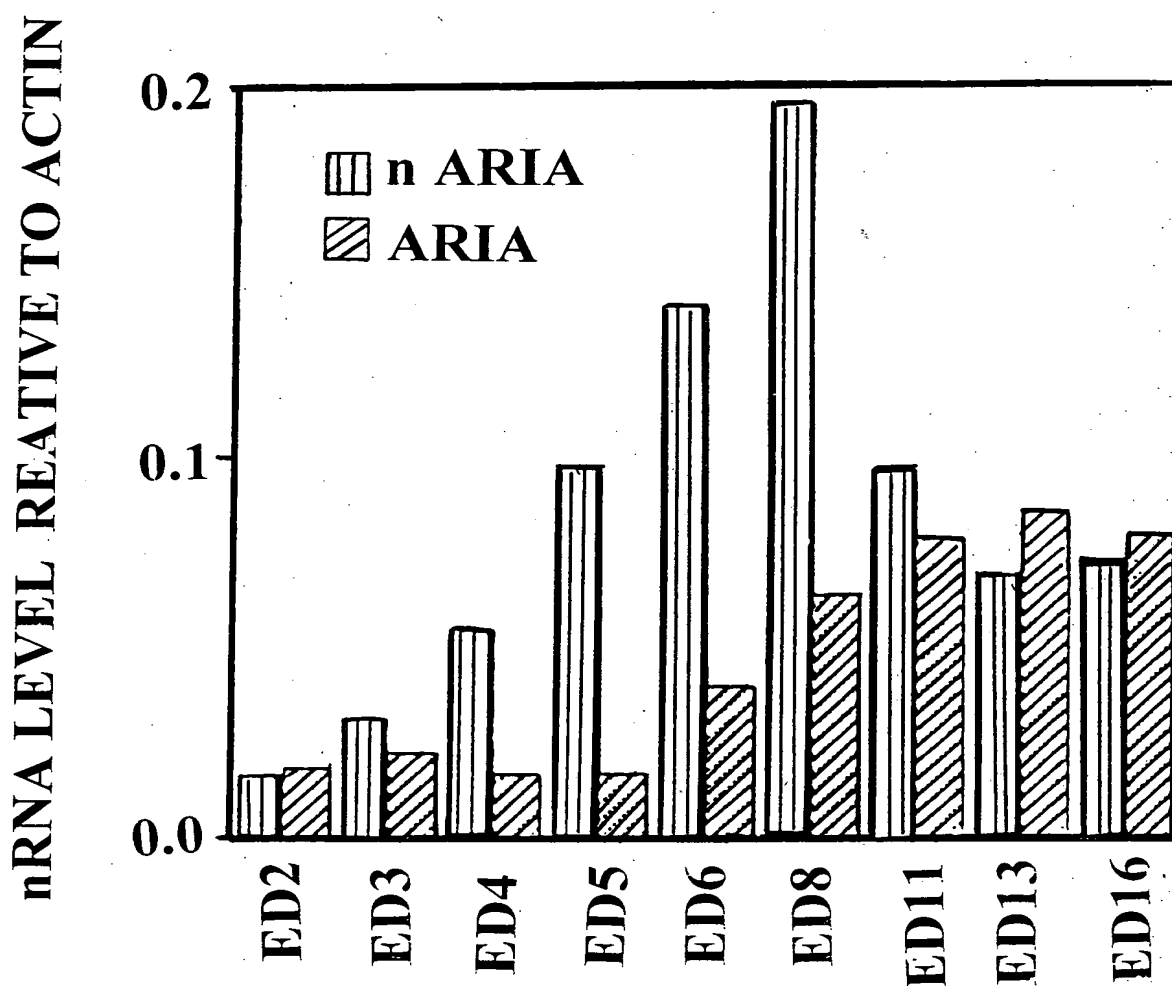


FIGURE 9B



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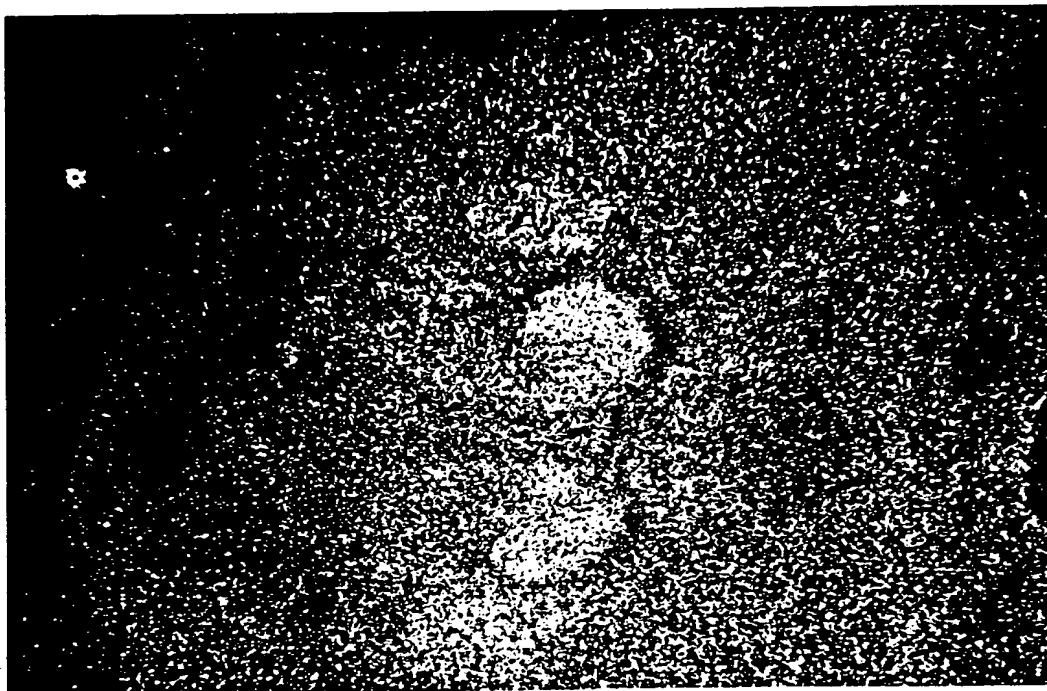
FIGURE 9C



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FIGURE 10A

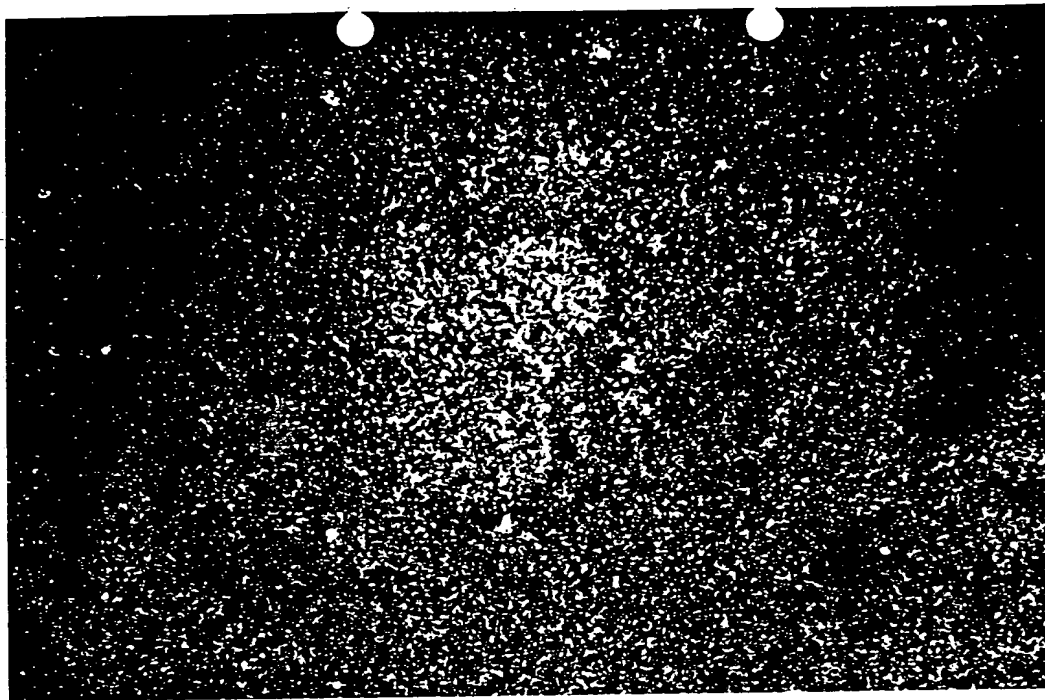
ED5 trunk cross-section



nARIA specific probe

FIGURE 10B

ED5 trunk cross-section

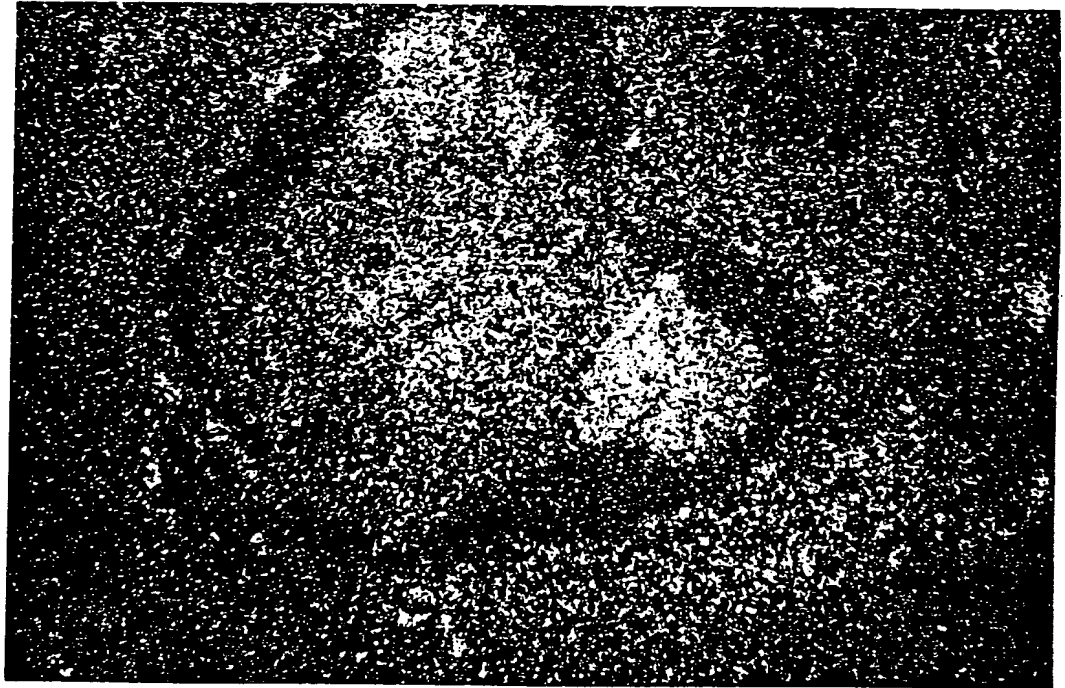


ARIA specific probe

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FIGURE 10C

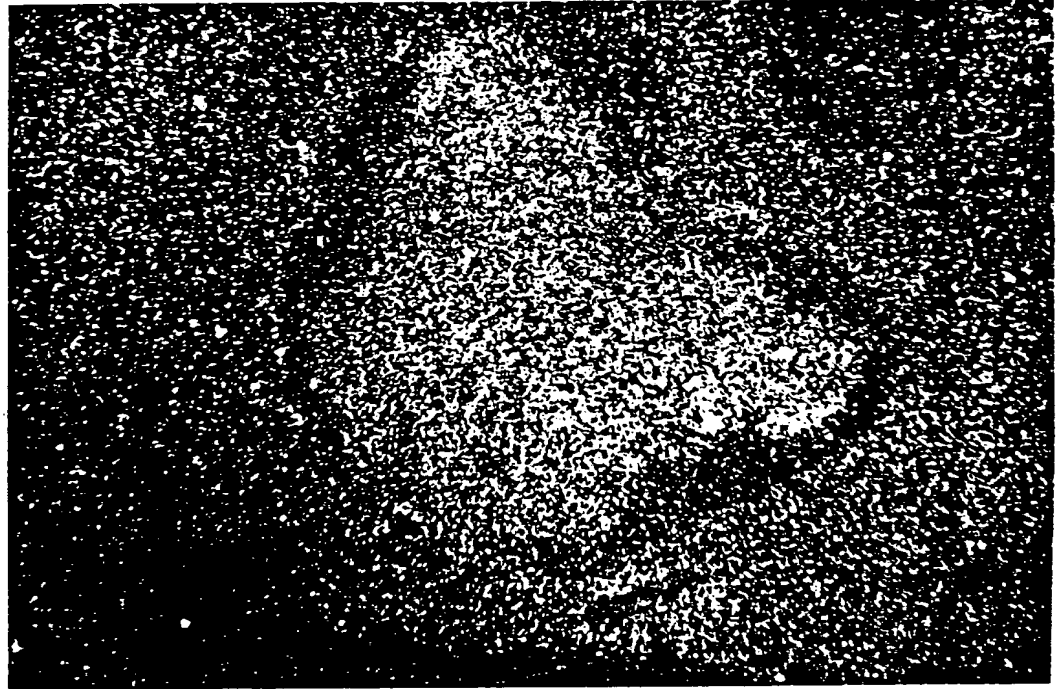
nARIA specific probe



ED7 trunk cross-section

FIGURE 10D

ARIA specific probe



ED7 trunk cross-section

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FIGURE 11A

A. MCF-7

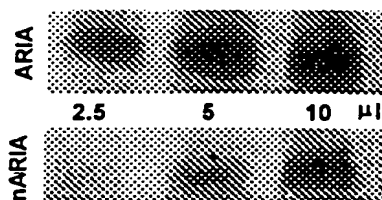


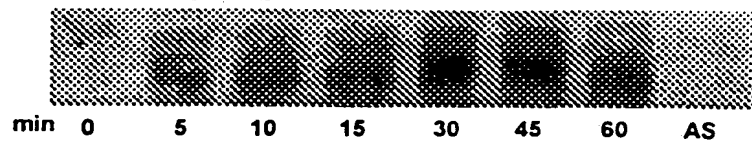
FIGURE 11B

B. LSG



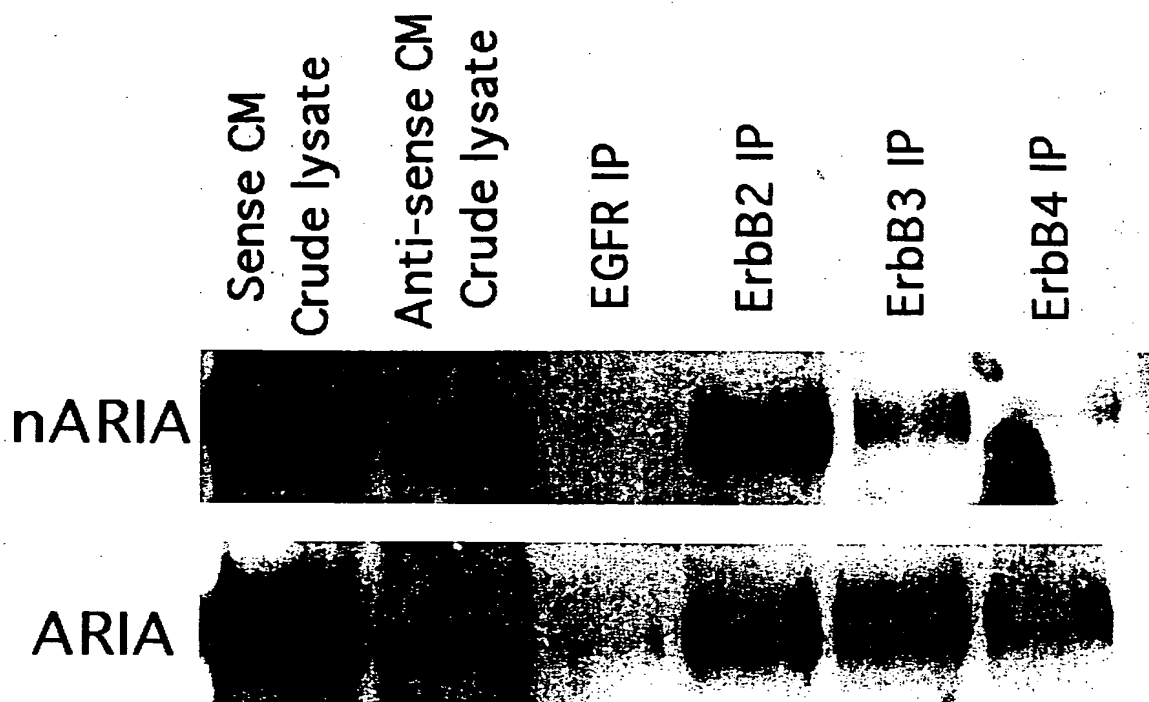
FIGURE 11C

C. TIME COURSE



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FIGURE 12



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FIGURE 13A

ED9 5%ufCEE ACh response

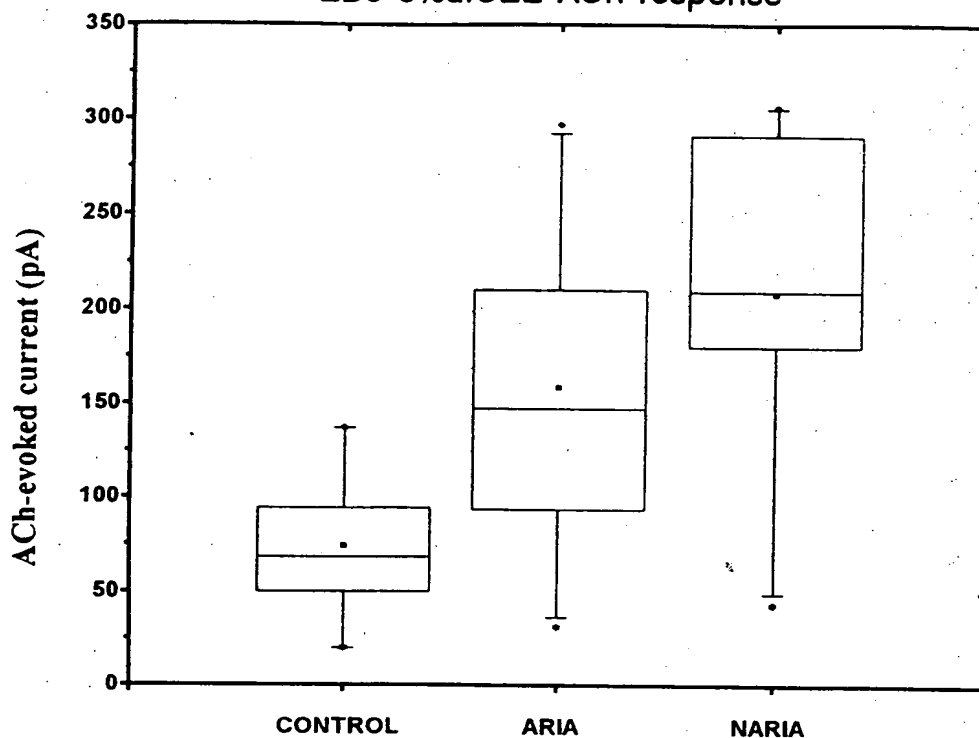
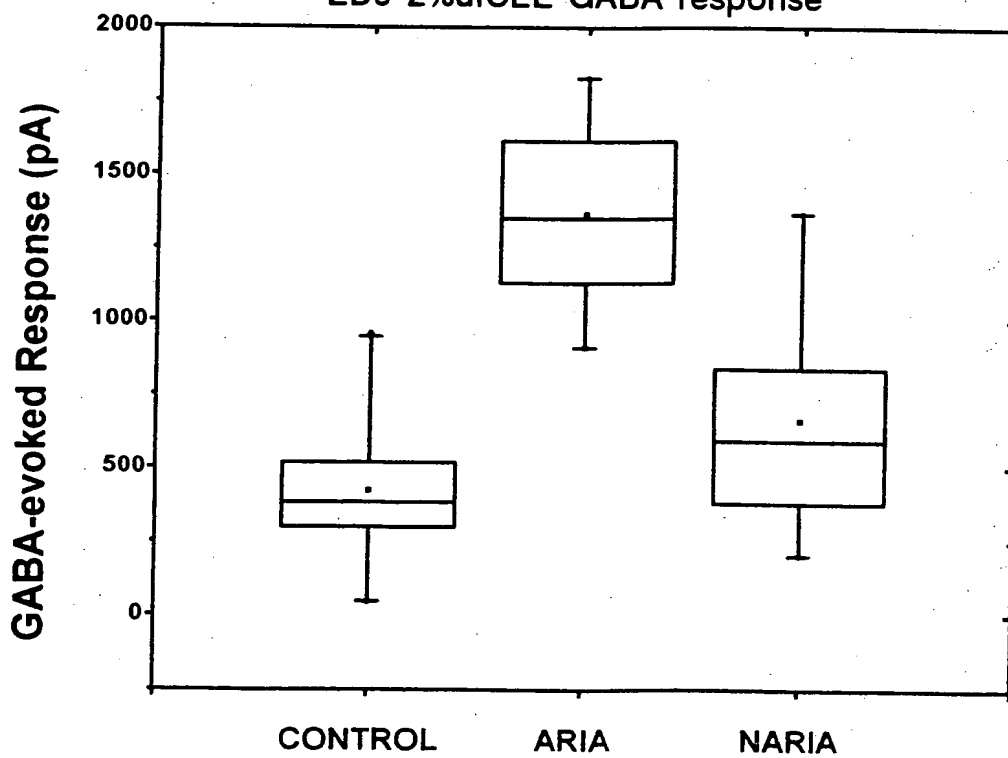


FIGURE 13B

ED9 2%ufCEE GABA response



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ED11 FIGURE 13D

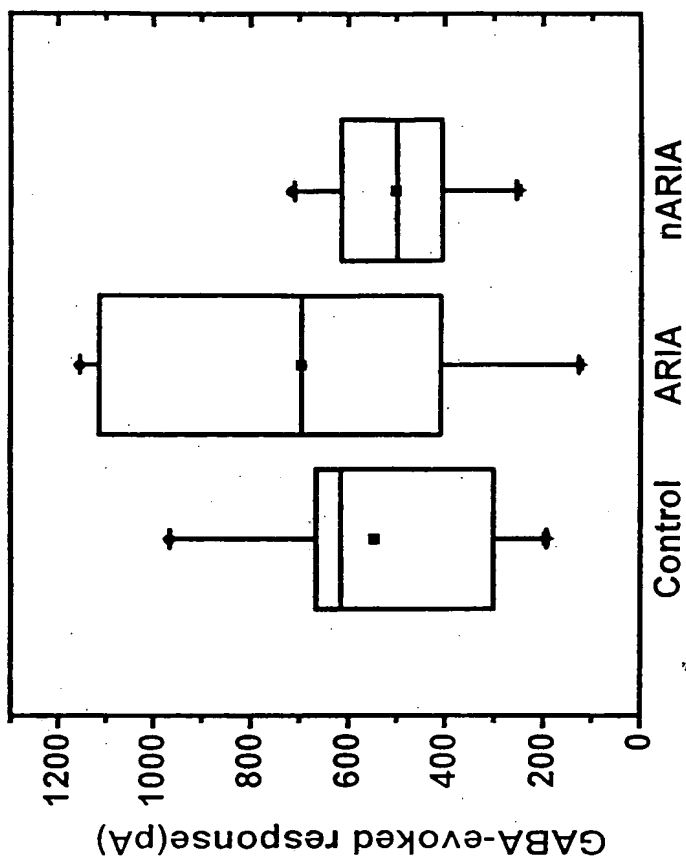
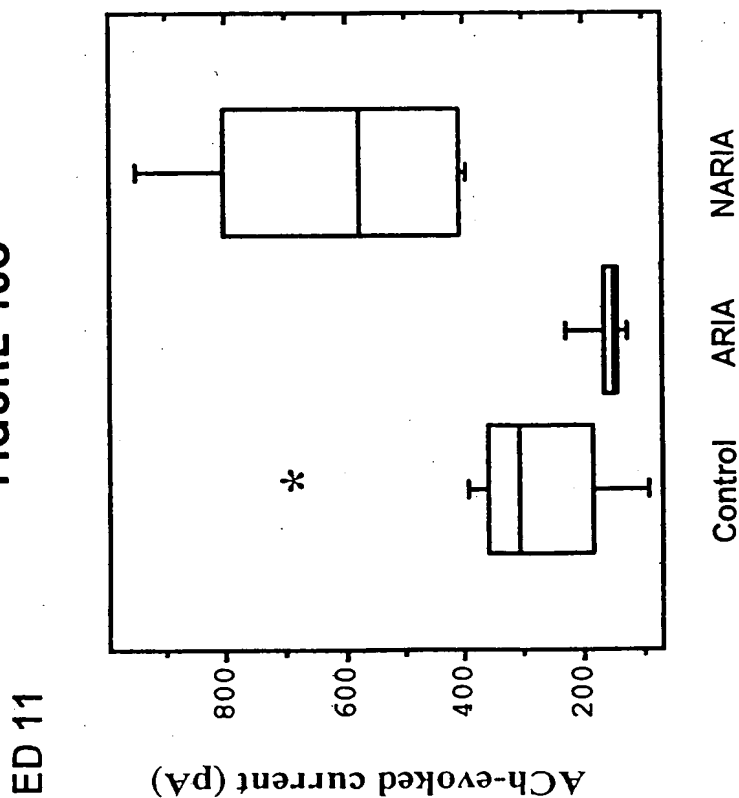


FIGURE 13C



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FIGURE 14A

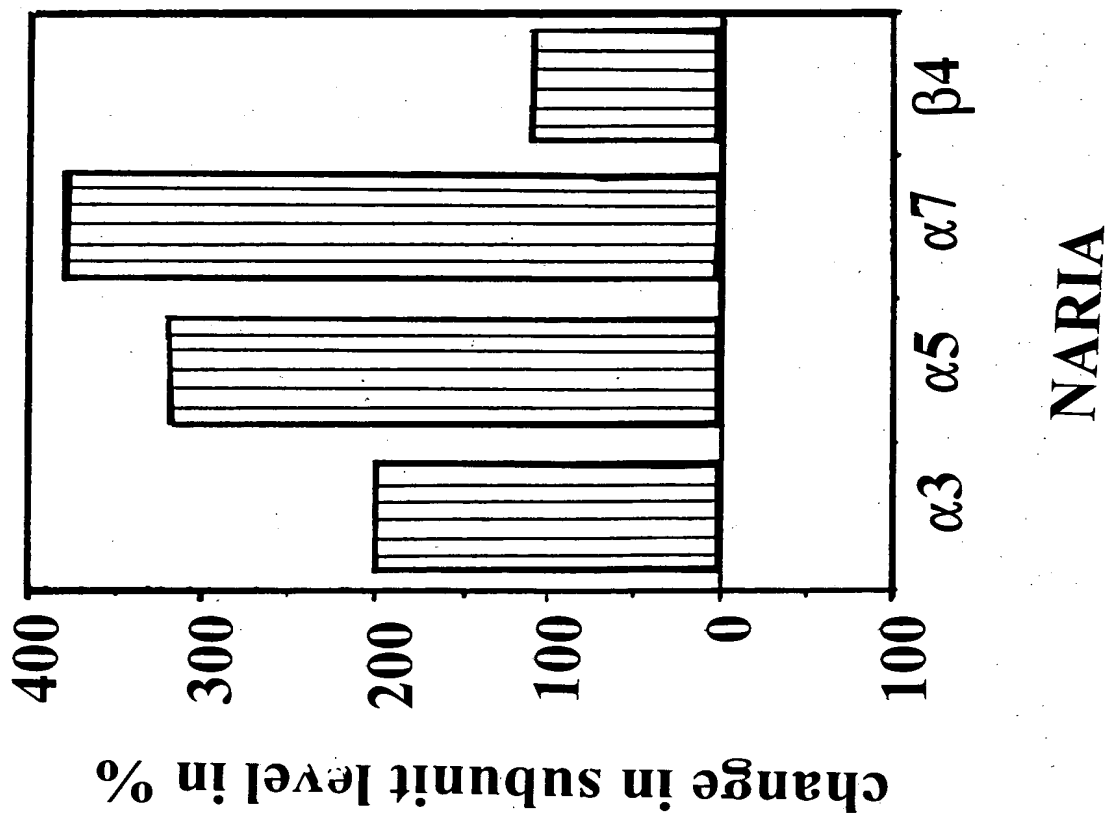
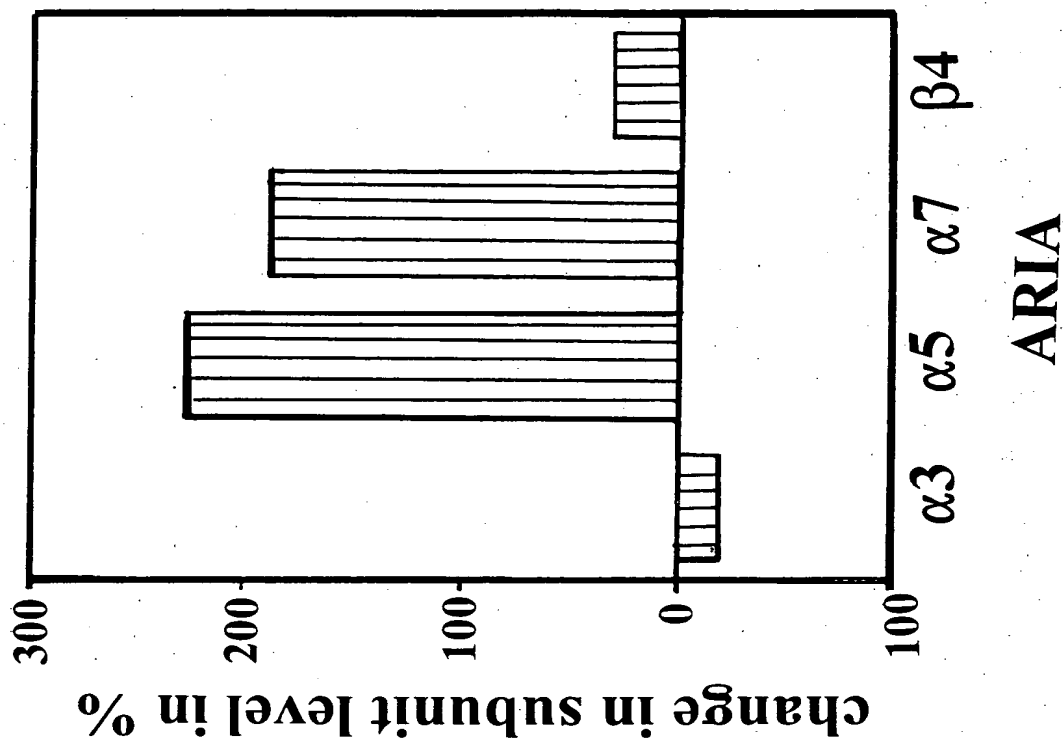
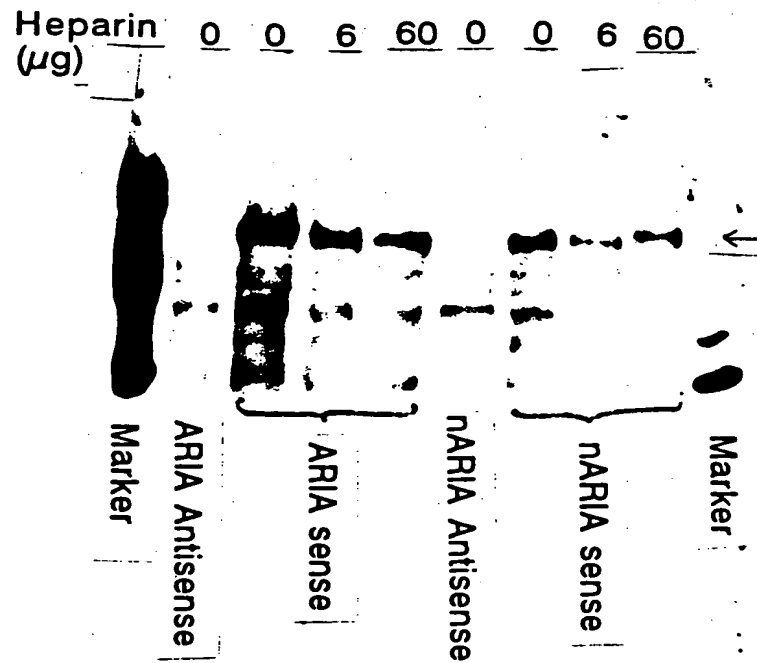


FIGURE 14B



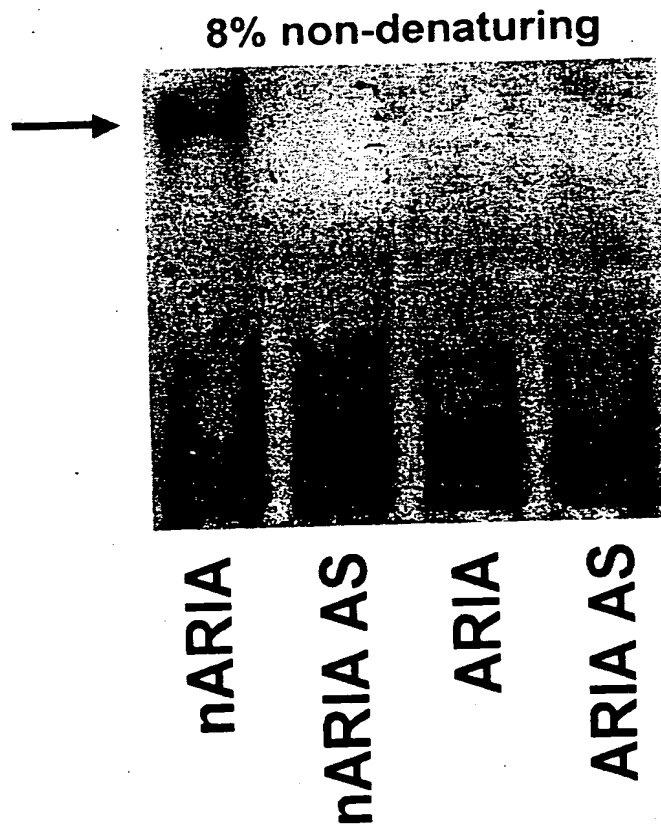
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FIGURE 15



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FIGURE 16



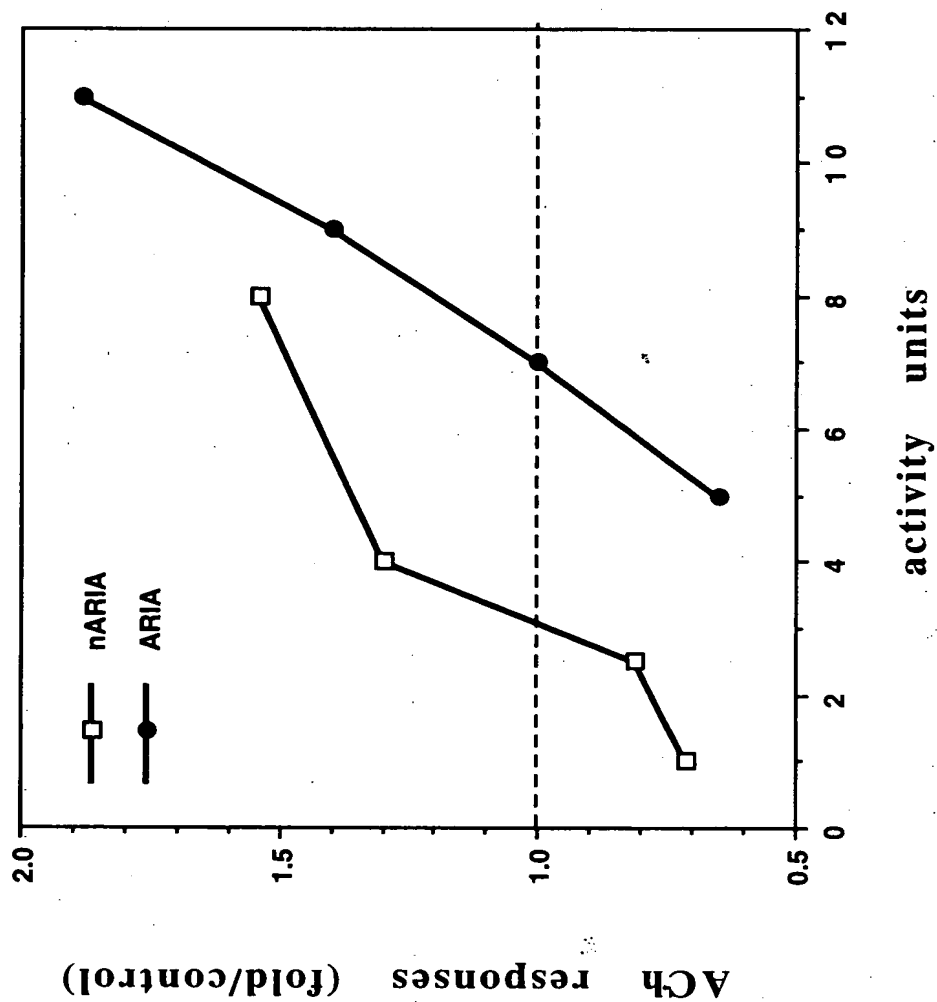
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FIGURE 17



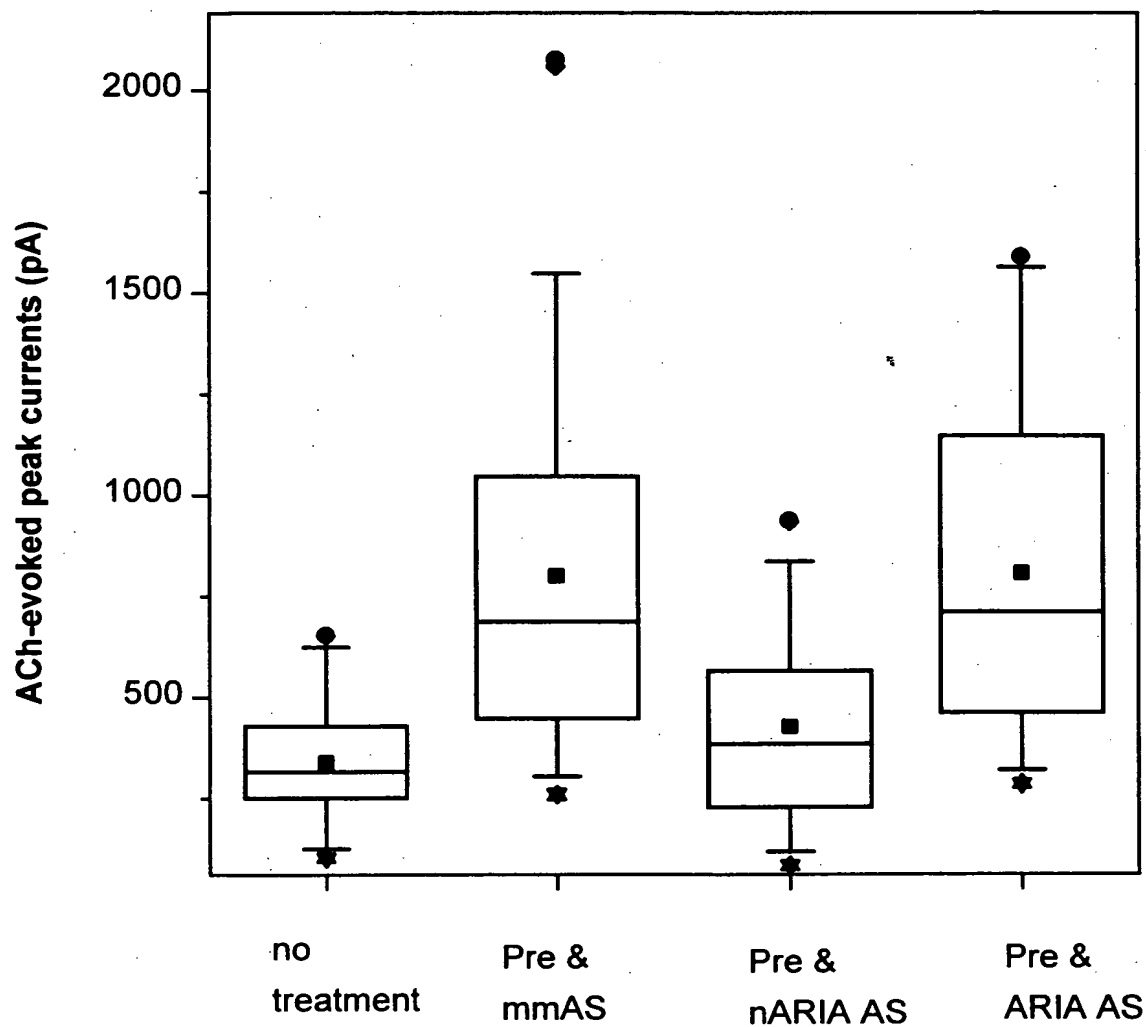
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FIG. 18



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FIG. 19



no treatment=sympathetic neurons alone

'Pre'=treatment of sympathetic neurons with presynaptic input-conditioned media+various oligos

mmAS=mismatch antisense control

nARIA AS=nARIA specific antisense oligonucleotides

ARIA AS=ARIA specific antisense oligonucleotides

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FIG. 20A

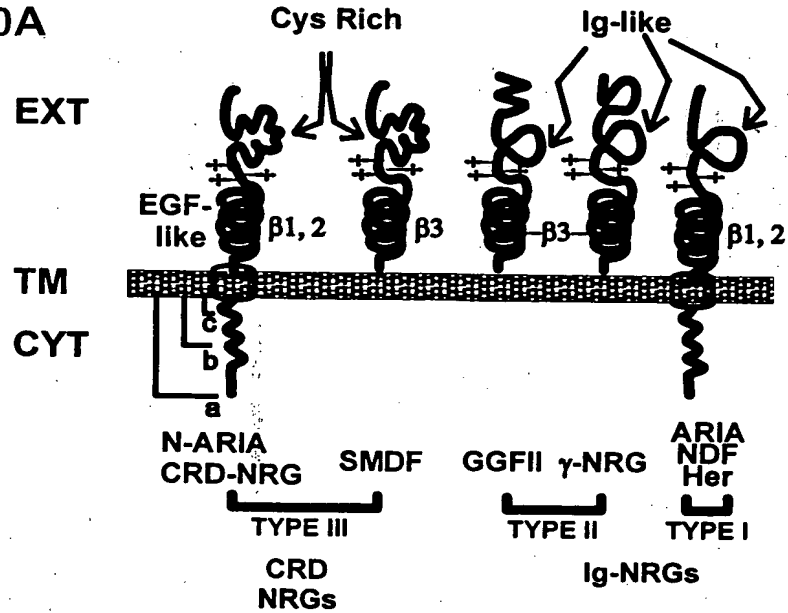
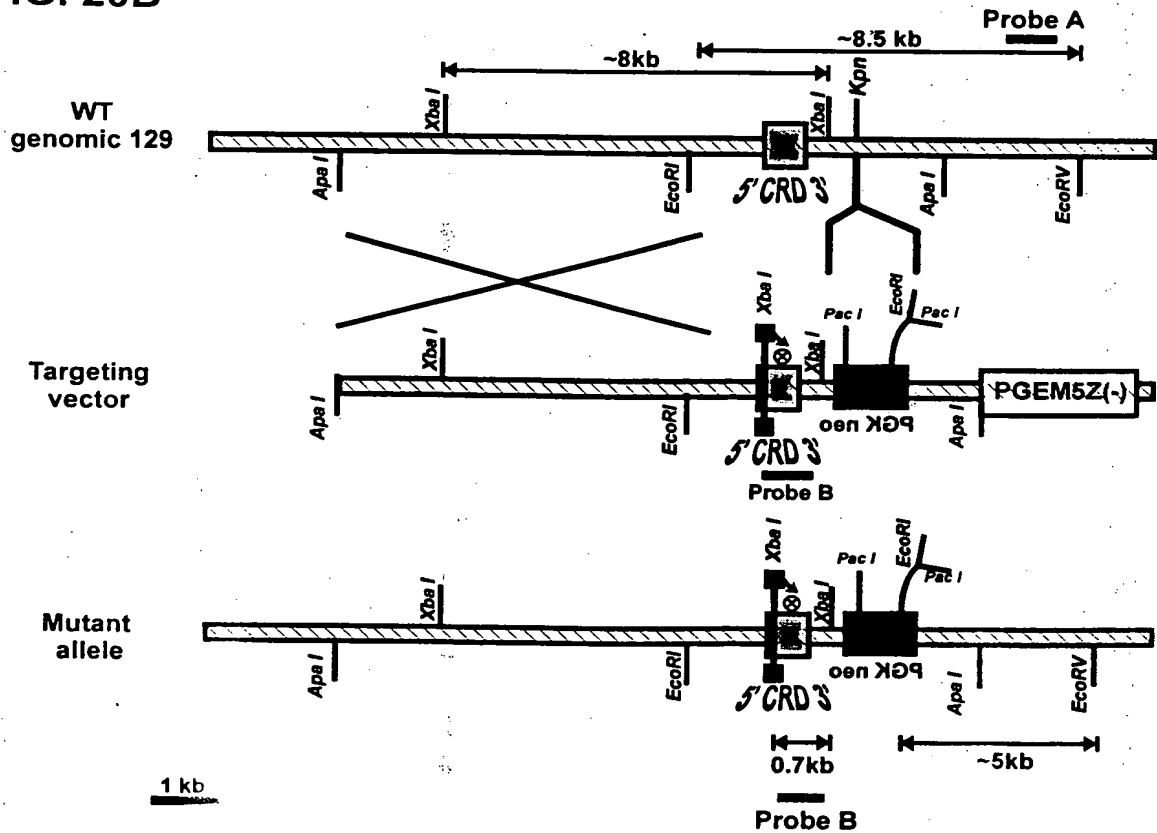


FIG. 20B



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FIG. 20C

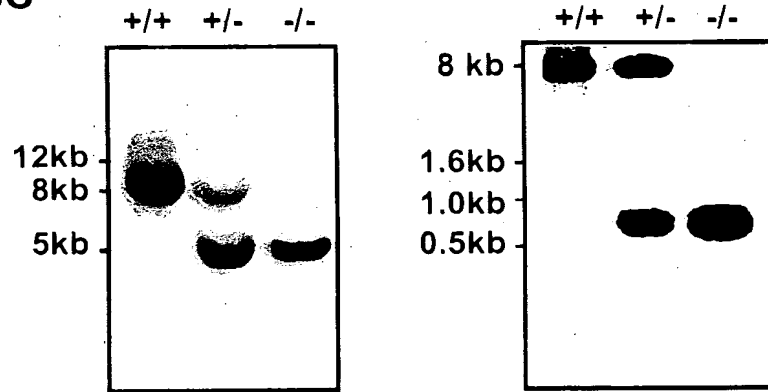


FIG. 20D

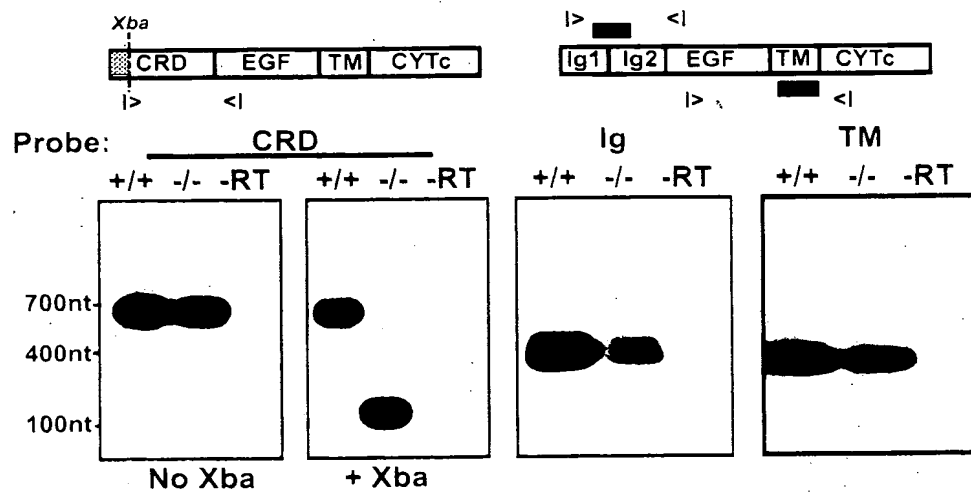
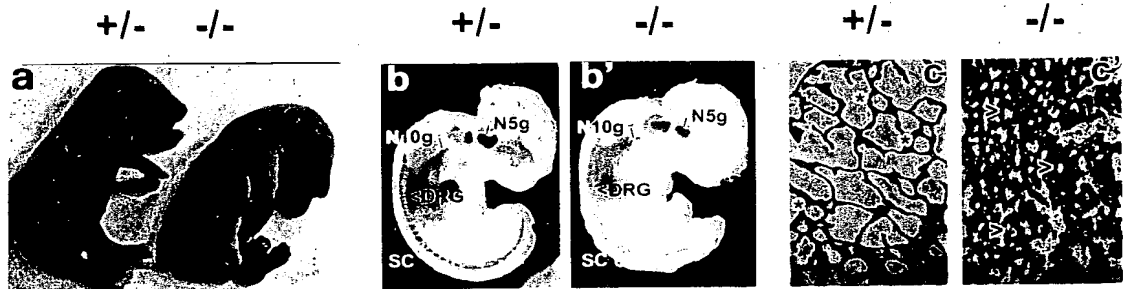
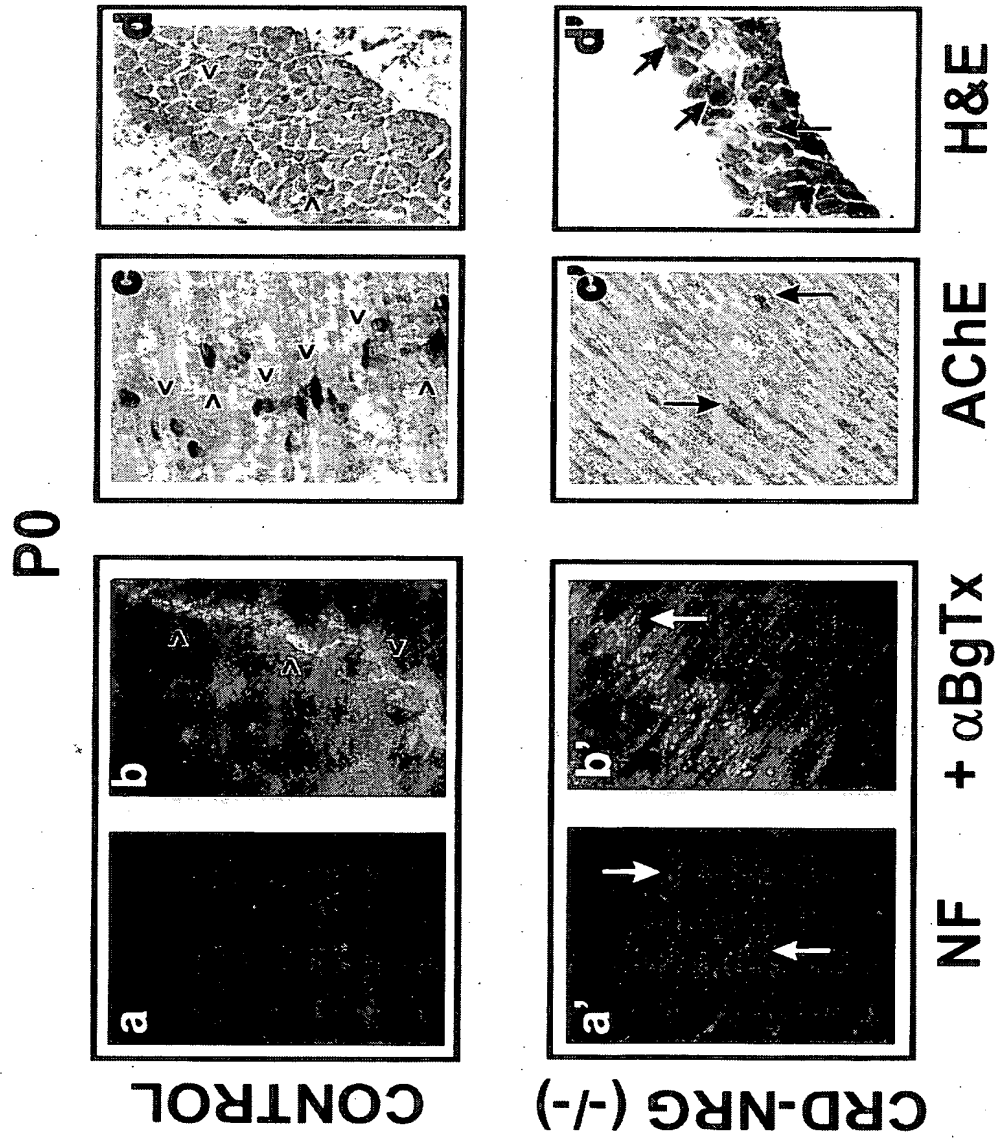


FIG. 20E



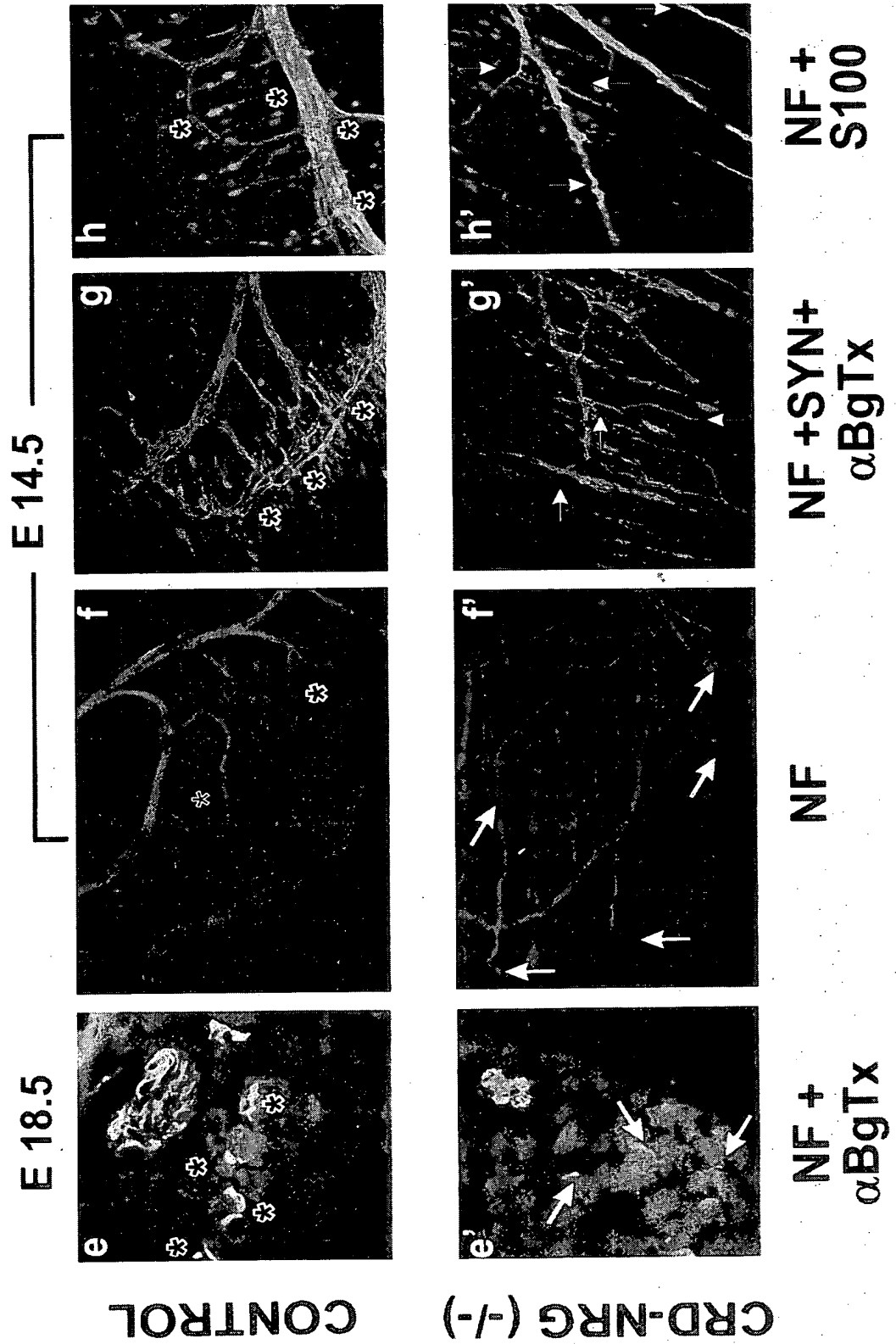
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FIG. 21A



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FIG. 21B



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FIG. 22A

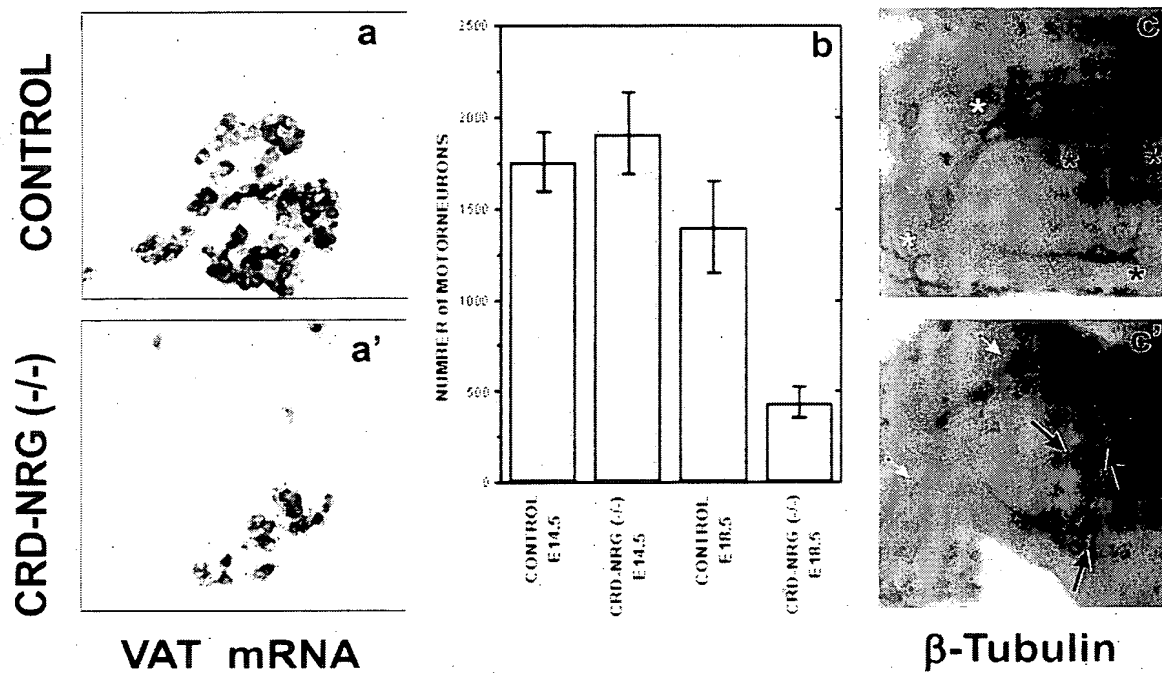
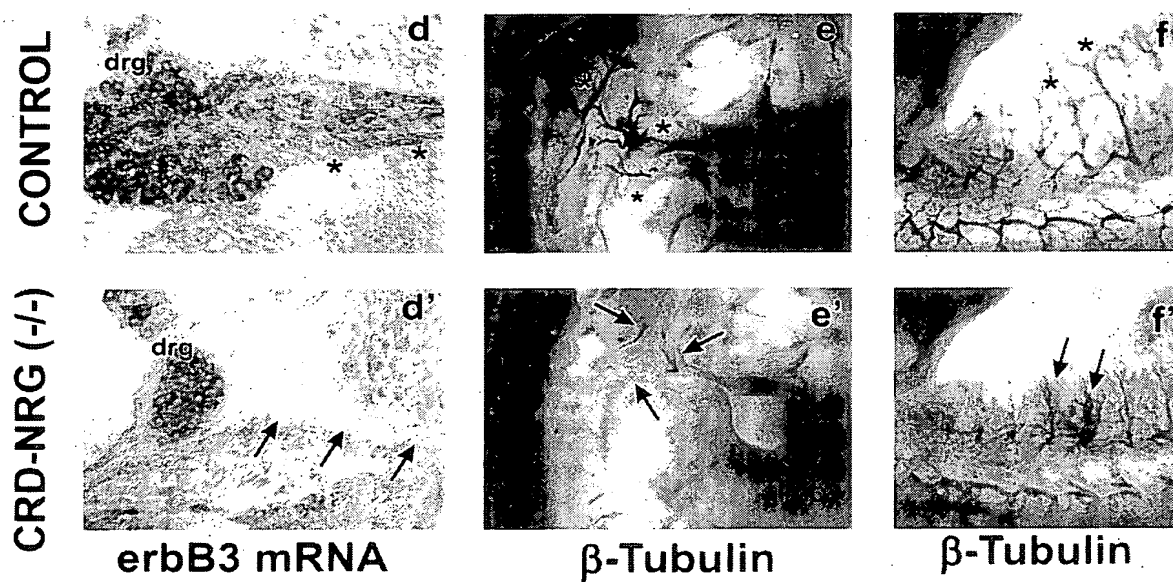
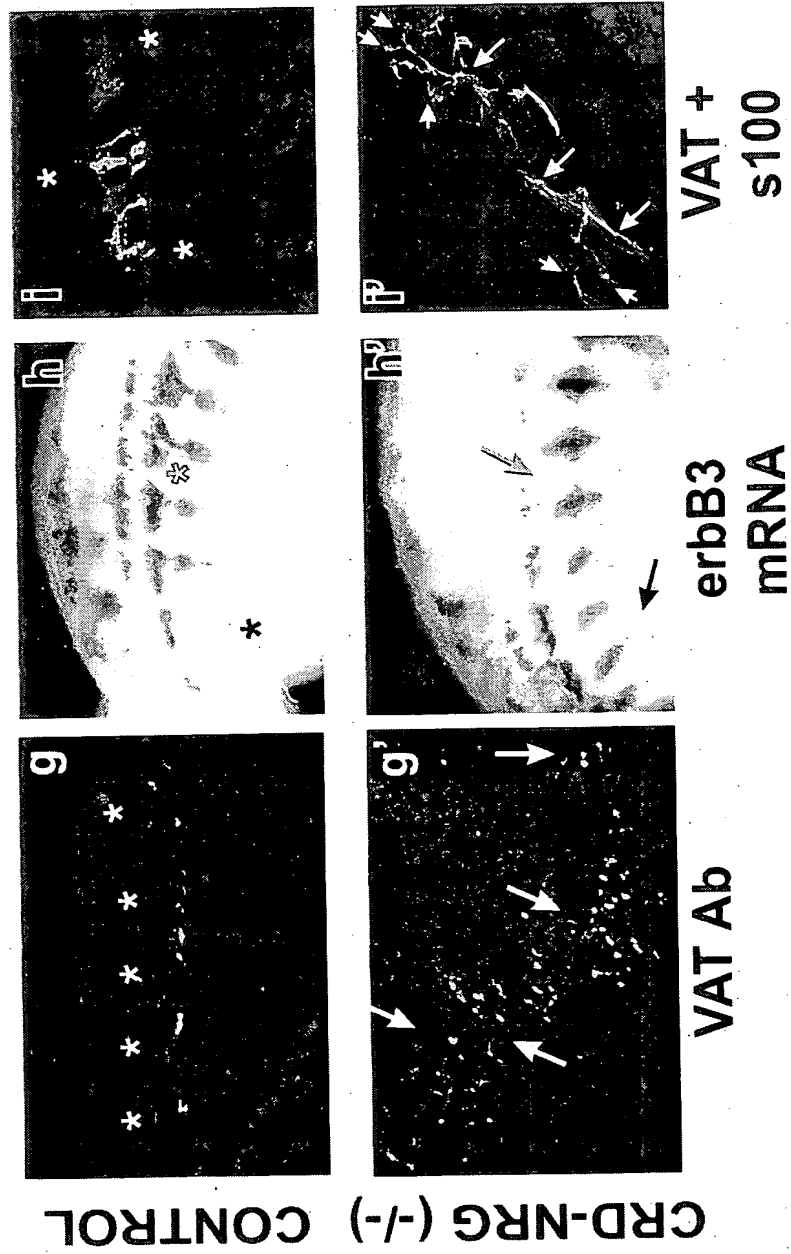


FIG. 22B



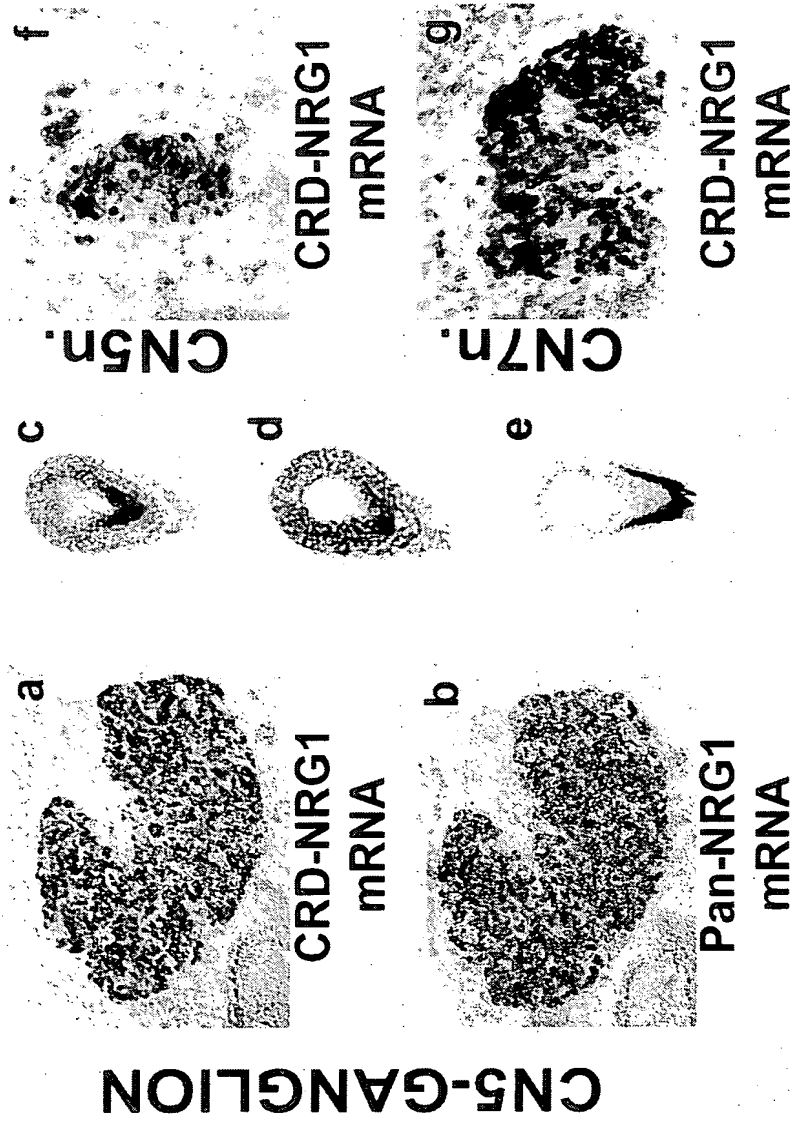
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FIG. 22C



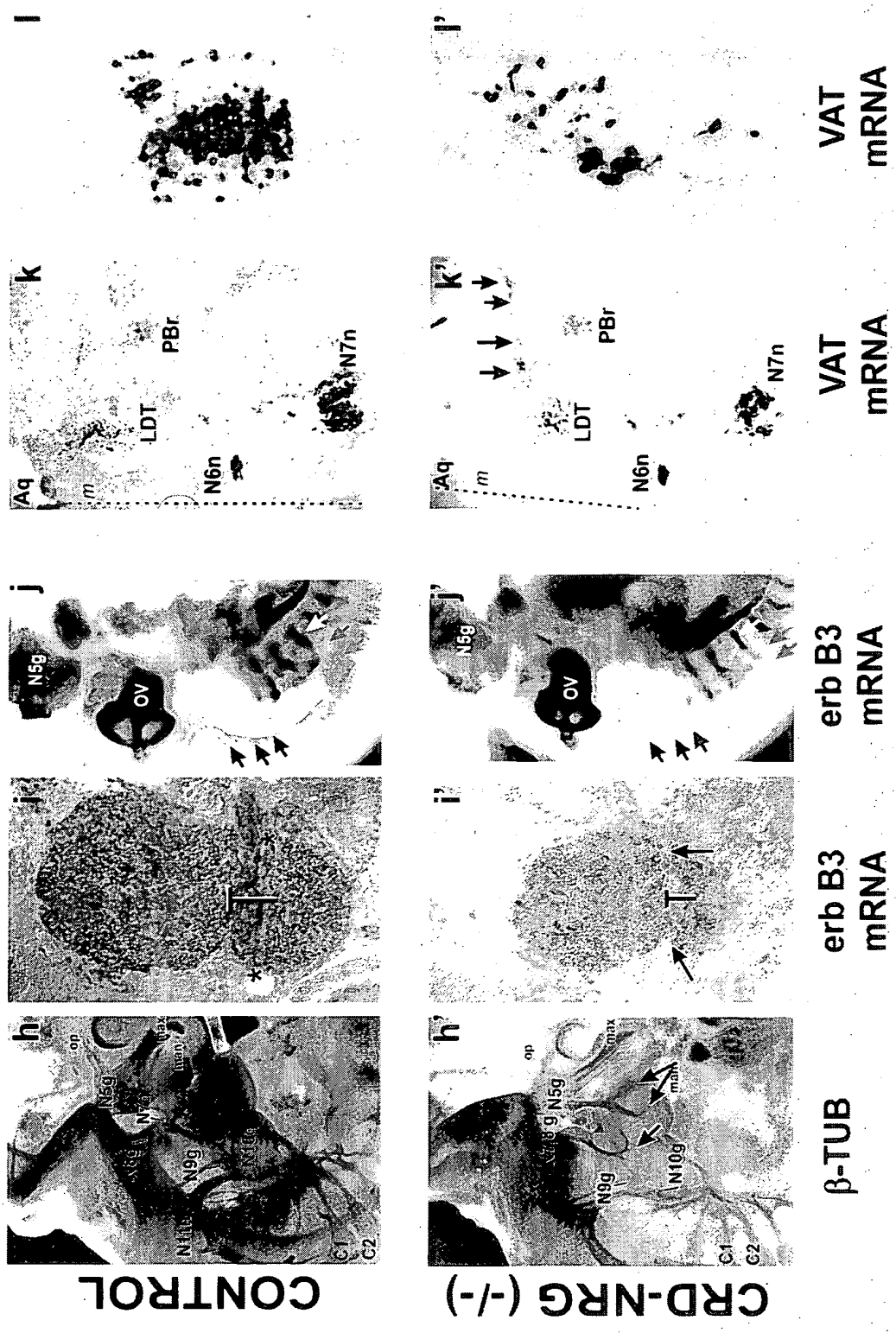
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FIG. 23A



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FIG. 23B



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